

Editorial

Do patients over 40 years of age benefit from closure of an atrial septal defect?

There are few topics in adult congenital heart disease as persistently debated as the management of atrial septal defects (ASDs). The paper by Jemielity and colleagues in this issue of *Heart* reactivates these fires.¹ Their retrospective study includes 88 largely symptomatic patients who received surgical closure of secundum and sinus venosus ASDs. Their age range at surgery was 40–62 years, with a mean of 46 years. They were followed for 1–17 years, mean 6.9 years. There was only one operative death. Functional class improved strikingly from 62% in New York Heart Association (NYHA) functional class III and IV preoperatively to 82% in NYHA class I and II postoperatively. Pulmonary vascularity improved on x ray, and right ventricular size diminished as assessed by echocardiography. Atrial flutter and fibrillation continued to be troublesome. This study adds additional evidence to the proposition that closure of secundum and sinus venosus ASDs benefits many or most symptomatic patients over age 40 years.

The “Canadian recommendations” state that the mere presence of a “significant ASD” (one associated with right ventricular volume overload, attributable exercise limitation, atrial arrhythmias, and/or late right heart failure) “warrants intervention”.²

As Ward described in 1993, the clinical trials on this issue and on which we base our management decisions are generally of poor quality by modern standards.³ More recent publications have not changed our dilemma. The available data do not have enough scientific merit to enable me or anyone else to answer this question through scientific analysis. Neither the treaters nor the non-treaters can win the argument!

Oft quoted recent papers are not comparable.^{4–6} Table 1 illustrates some of the differences. That they come to different conclusions is no surprise.

Indeed, there were two studies by Konstantinides and colleagues. The 1994 abstract presentation included 206 patients over age 40 with ASDs.⁷ The conclusion was that “routine surgical repair of ASD diagnosed after the age of 40 is unlikely to improve event-free survival”. The 1995 manuscript excluded 11 patients with severe mitral regurgitation, and 15 patients with coronary disease—and reported on 179 patients with “isolated” ASDs.⁸ This is clearly described in the text, but is generally not

appreciated, and raises serious methodologic issues. It concludes that “surgical repair of an atrial septal defect in patients over 40 years of age, as compared with medical treatment, increases long term survival”. At best, the paper speaks to symptomatic ASD patients over 40 years of age who do not have coronary disease or severe mitral regurgitation.

Pros and cons of ASD closure over the age of 40

What are some other factors relevant to the physician’s consideration of the pros and cons of ASD closure of the patient over the age of 40? Some justify closure to avoid later “severe pulmonary hypertension”. Although it is true that older ASD patients have higher pulmonary artery pressures, severe pulmonary hypertension is very uncommon, and I see this argument as largely contrived. We are prepared to believe that repair after age 25 years is associated with a reduced group life expectancy.⁴ The weight of evidence supports the belief that most symptomatic patients feel better after surgery, as in the current paper. Indeed, even “asymptomatic” patients often report improved physical capacity after closure. Cardiopulmonary data have shown reduced physical performance in adults with ASDs. Evidence of objective improvement after closure has been harder to find. The study by Helber and colleagues offers important evidence that cardiopulmonary performance may normalise in such patients (half their patients were > 40 years old at the time of surgery), although it may take up to 10 years for complete recovery to occur.⁸

Atrial arrhythmias are especially troublesome in the over age 40 ASDs. Berger and colleagues showed a high prevalence of atrial arrhythmias over age 40 years in a Holter monitor based study.⁹ The mean age of adults with no arrhythmias was 39 years (range 18–73 years), with atrial flutter preoperatively it was 54 years (range 21–75 years), and with atrial fibrillation preoperatively the mean age was 59 years (range 44–71 years). Surgical closure of the ASD alone reduced the up to 6+ months incidence of atrial flutter from 18 to 10 patients of their study group of 211 patients. Gatzoulis and associates reported in a large adult surgical series that postoperative clinical (sustained) arrhythmias persisted “late” after surgery only in the over

Table 1 Comparison of recent clinical trials of adult atrial septal defect (ASD) management

Paper	Symptoms (%)	Age (years)	Follow up (years)	Lost to follow up (%)	Comments	Conclusion
Murphy <i>et al</i> 1990 ⁴	75	All ages	27–32	1	Only 123 patients, about 31 over age 40; intake 1956–60; stroke deaths in patients not on coumadin	Repair ASDs before age 25; in older patients, premature death, heart failure, stroke, and atrial fibrillation were common
Shah <i>et al</i> 1994 ⁵	Few	> 25	25	22	Extremely low mortality (1/82); intake 1955–1970 (approx)	Medical and surgical outcomes equivalent; major pulmonary hypertension not seen
Konstantinides <i>et al</i> 1995 ⁸	94	> 40	8	0	179 patients; surgical patients younger; 17 crossed over to surgery; intake 1966–91; excluded coronary disease and severe mitral regurgitation	Surgical repair of an ASD in the over 40 patient is better than medical treatment re survival and heart failure, although arrhythmias are a problem in both groups

age 40 patients.¹⁰ They proposed a study to determine whether a maze procedure modification for atrial fibrillation combined with surgical closure of ASDs in selected patients might reduce their later arrhythmia, stroke, and anticoagulation burden. A related strategy for atrial flutter combining surgical or electrophysiological laboratory ablation with operative or device closure of ASDs should also be studied. We may be entering a new era in the management of the older ASD patient.

Device versus surgical closure

It is ironic that the current paper describes long term surgical outcomes at a time when the use of devices (especially the Amplatzer device) is revolutionising the treatment of secundum ASDs in Europe and Canada at least. Despite the proven safety and efficacy of surgical closure, there is a widespread belief among expert practitioners (informal polling of 25 colleagues) that device closure is now preferable to surgery. Without any evidence that medium and long term results will justify this approach, many have climbed aboard the device bandwagon. We hope for the patients' sake that future outcomes prove the wisdom of this attitude.

In summary, here's how the situation appears to me. If a patient with an ASD is symptomatic at any age, closure will usually improve life quality, often strikingly. If the patient is asymptomatic, there is no clear evidence to guide a decision for or against closure, although, in my adolescent and adult practice and based on extensive personal experience, I will continue to recommend closure at any age to most patients with a "significant" defect. Those who wait for the appearance of symptoms face the risk that delayed closure (if eventually elected) may carry both morbid and mortal disadvantages. Secundum defects may be closed by surgery or device methodology. Sinus venosus (with partial anomalous pulmonary venous return) and primum ASDs require surgical closure, preferably by congenital heart surgeons, who usually have an active paediatric practice as well. Patients with preoperative atrial flutter or fibrillation should be considered for concomitant arrhythmia treatment as described in centres studying such techniques. When access to centres offering combined ASD closure and antiarrhythmic intervention is available, interventional

cardiologists and surgeons should think twice before offering "monotherapy" to the secundum ASD patient with a history of atrial flutter or fibrillation. In addition, cardiologists should have a low threshold to anticoagulate these older patients for a variety of reasons that we cannot explore here.

Finally, patients with secundum ASDs over the age of 40 years must receive a fair description of the options available, especially if they are asymptomatic. We do not have "proof" to guide our management, and we must rely on our experience as well as the available evidence in dealing with these patients. We should not override the patient's right to choose between competing approaches, and should provide a frank and fair discussion of the pros and cons of each. In the absence of persuasive evidence, we can do no better.

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Electronic pages

eHEART: www.heartjnl.com

The following electronic only article is published in conjunction with this issue of *Heart*.

Cardiac rupture caused by *Staphylococcus aureus* septicaemia and pericarditis: an incidental finding

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A 35 year old woman with a long history of intravenous drug abuse presented to a local hospital with severe anaemia, fever, raised markers of inflammation, and positive blood cultures for *Staphylococcus aureus*. She responded to treatment with antibiotics with improvement in her symptoms and markers of inflammation. Four weeks later a "routine" echocardiogram showed a rupture of her left ventricular apex and a large pseudoaneurysm. There had been no deterioration in her symptoms or haemodynamic status to herald this new development. It was successfully repaired surgically and the patient made a good recovery.

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